

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows.

1. (Currently Amended) A method of forming a device isolation film in a semiconductor device, comprising the steps of:

performing a first ion implantation forming an active region on which ions are implanted for controlling a threshold voltage on a surface of a semiconductor substrate;

forming a trench having a side wall to define an active region and a device isolation region by etching a portion of the semiconductor substrate of a device isolation region;

forming a side wall oxidation film at the side wall of the trench by performing an oxidation process;

performing a second an ion implantation process on the into a whole active region to compensate for an ion concentration of the ions for controlling a threshold voltage, which are diffused from the active region; and

forming a device isolation film by burying the oxidation film inside the trench.

2. (Previously Presented) The method of claim 1, comprising forming the side wall oxidation film to perform a rounding treatment on an upper portion or a bottom corner of the trench and to increase an adhesive strength of the oxidation film to be buried inside the trench, at the same time, and the film is formed to a thickness in the range of about 50 Å to 100 Å.

3. (Previously Presented) The method of claim 1, comprising performing the oxidation process by a dry oxidation method at a temperature in the range of about 800°C to 950°C.

4. (Previously Presented) The method of claim 1, comprising performing the ion implantation process on an active region after the oxidation process is performed by a dose of 1E 11 ion/cm² to 1E12 ion/cm² in an energy band of 10 KeV to 25 KeV.

5. (Previously Presented) The method of claim 1, comprising using boron as an ion that is implanted for controlling the threshold voltage.

6. (Currently Amended) A method of forming a device isolation film in a semiconductor device, comprising the steps of:

forming a screen oxide film on a semiconductor substrate;

performing a first ion implantation forming an active region on which ions are implanted for controlling a threshold voltage on the semiconductor substrate;

removing the screen oxide film;

sequentially forming a gate oxide film, a polysilicon film and a pad nitride film on the semiconductor substrate;

forming a trench to define an active region and a device isolation region by sequentially etching a portion of the pad nitride film, the polysilicon film, the gate oxide film and the semiconductor substrate of the device isolation region;

forming a side wall oxidation film at the side wall of the trench by performing an oxidation process;

performing a second an ion implantation process into a whole on the active region to compensate for an ion concentration of the ions for controlling a threshold voltage, which are diffused from the active region;

removing the pad nitride film; and

forming a device isolation film by burying the oxidation film inside the trench.

7. (Previously Presented) The method of claim 6, comprising forming the screen oxide film to a thickness in the range of about 50 Å to 70 Å by a wet oxidation method or a dry oxidation method at a temperature in the range of about 700°C to 900°C.

8. (Currently Amended) The method of claim 6, comprising forming the gate oxidation oxide film to a thickness in the range of about 500 Å to 700 Å by performing an annealing process for 20 minutes to 30 minutes by using N₂ gas at a temperature of about 900 °C to 910°C after performing a dry or a wet oxidation process at a temperature of about 750 °C to 850°C.

9. (Previously Presented) The method of claim 6, comprising forming the polysilicon film to a thickness in the range of about 250 Å to 500 Å by depositing a doped polysilicon film under a pressure of about 0.1 torr to 3 torr in an atmosphere of a PH₃ gas and a Si source gas such as SiH₄ or Si₂H₆ at a temperature of about 500°C to 550°C.

10. (Previously Presented) The method of claim 6, comprising forming the pad nitride film to a thickness of about 900 Å to 2000 Å by a low pressure chemical vapor deposition method.

11. (Previously Presented) The method of claim 6, comprising forming the side wall oxidation film to perform a rounding treatment on an upper portion or a bottom corner of the trench and to increase an adhesive strength of the oxidation film to be buried inside the trench, at the same time, and forming the film to a thickness in the range of about 50 Å to 100 Å.

12. (Previously Presented) The method of claim 6, comprising forming the oxidation process by a dry oxidation method at a temperature in the range of about 800°C to 950°C.

13. (Previously Presented) The method of claim 6, comprising performing the ion implantation process on an active region after the oxidation process is performed by a dose of 1E 11 ion/cm² to 1E12 ion/cm² in an energy band of 10 KeV to 25 KeV.

14. (Previously Presented) The method of claim 6, comprising using boron as an ion that is implanted for controlling the threshold voltage.